DDOT Value Pricing Initiatives

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What is Performance Based Parking?

Performance parking is a curbside management strategy DDOT began in March 2008 in the Ballpark District of Ward 6.

Performance parking works by adjusting the rates and/or the time restrictions on metered blocks while protecting the parking supply on surrounding residential and mixed used corridors through increased residential parking enforcement.

Data Collection Process and Outcomes

In 2011, DDOT and COG enhanced the data collection methodology and approach by generating per block occupancy and turnover rates based on actual manual counts instead of mathematical formulas measuring curbside footage. The purpose of this data collection effort was to determine the impact of performance parking in the vicinity of the Washington Nationals Ballpark in southeast and Near Southeast DC.

TABLE 1: BALLPARK DISTRICT TOTAL CURBSIDE OCCUPANCY BY STATE WITH TURNOVER RATES ON ALL BLOCKS (with duplicate registration numbers not removed)

		DISTRICT OF COLUMBIA		MARYLAND		VIRGINIA		OTHER STATES	
		TOTAL CURBSIDE OCCUPANCY BY ZONE	TURNOVER RATE BY STATE PER ZONE	TOTAL CURBSIDE OCCUPANCY BY ZONE	TURNOVER RATE BY STATE PER ZONE	TOTAL CURBSIDE OCCUPANCY BY ZONE	TURNOVER RATE BY STATE PER ZONE	TOTAL CURBSIDE OCCUPANCY BY ZONE	TURNOVER RATE BY STATE PER ZONE
AWAY GAMES	ZONE A	1,553	31%	590	12%	387	8%	2,482	50%
	ZONE B	811	32%	316	13%	309	12%	1,066	43%
	ZONE C	2,321	45%	412	8%	559	11%	1,897	37%
	TOTAL	4,685	37%	1,318	10%	1,255	10%	5,445	43%
HOME GAMES	ZONE A	1,917	34%	714	12%	479	8%	2,610	46%
	ZONE B	1,078	24%	778	17%	796	17%	1,931	42%
	ZONE C	3,135	44%	568	8%	657	9%	2,728	38%
TOTAL OR AVG.		**6,130**	**35%**	**2,060**	**12%**	**1,932**	**11%**	**7,269**	**42%**

Block by Block Data Collection

EXECUTIVE SUMMARY: 2010 TOP TEN HIGHEST CURBSIDE OCCUPANCY RATES BY HUNDRED BLOCK ON NATIONALS GAME DAYS

ZONE	HUNDRED BLOCK	STREET NAME	PARKING SPACES PER BLOCK SEGMENT	AVERAGE OCCUPANCY		MAXIMUM OCCUPANCY		TURNOVER RATE
				NUMBER OF VEHICLES	OCCUPANCY PERCENTAGE	NUMBER OF VEHICLES	OCCUPANCY PERCENTAGE	
A	900		3	10	333%	16	533%	1:27
A	100	M Street, SW	3	6	200%	12	400%	1:20
A	1600		6	16	267%	19	317%	1:58
A	1100		8	11	138%	21	263%	2:12
B	900	Half Street, SE	5	7	140%	11	220%	0:46
B	1000		24	14	58%	67	279%	1:56
B	1000		3	4	133%	6	200%	2:01
B	1200		22	19	86%	46	209%	2:13
A	UNIT		8	8	100%	13	163%	1:25
A	1500	Half Street, SW	22	22	100%	34	155%	0:08

Data collectors used two or three private vehicles outfitted with LPR systems traveling the same routes continuously for eight hour intervals for three consecutive days, including a Saturday or Sunday This consists of a digital camera, a laptop computer, a video conversion unit (to convert images from the camera into a format acceptable for computer processing and a global positioning system (GPS) unit.

Columbia Heights Pilot Zone Data Collected

2011 Curbside Occupancy Rate
There are 44 blocks within the Columbia Heights pilot zone

- 32 or 73% of the blocks have an occupancy rate below 85%
- 12 or 27% of the blocks have an occupancy rate at or above 85%
- 6 blocks have multi space meters (MSMs) with variable hours of operation
- 3 MSM blocks or 50% have an occupancy rate at or above 85%

There are 44 blocks within the Columbia Heights pilot zone

The average turnover in the Columbia Heights pilot zone is 2:47

- 1:58 is the average turnover on multi space meter (MSM) blocks
- 2:52 is the average turnover on non metered streets in pilot zone

Data Collection Process and Outcomes

Table 2
State's of registration (with duplicate registration numbers removed)

D.C.		Maryland		Virginia		Other or unknown	
2005	42%	785	16%	406	8%	1635	34%

These MSM blocks above 85% are:

- 3000 block of 14th Street: 89%
- 3100 block of 14th Street: 130%
- 3300 block of 14th Street: 100%

The remaining nine blocks with occupancy rates at or above 85% are:

- 3000 block of 13th Street: 113%
- 3300 block of 13th Street: 85%
- 1200 block of Columbia Road: 86%
- 1500 block of Columbia Road: 140%
- 1200 block of Irving Street: 113%
- 1300 block of Irving Street: 110%
- 1200 block of Monroe Street: 86%
- 1300 block of Monroe Street: 86%
- 1200 block of Park Road: 92%

H Street NE Pilot

Beginning in March 2012 DDOT will begin performance based parking on all meters along the H Street, NE corridor from 3rd Street, NE to 15th Street, NE/Benning Road, NE. Performance based parking is a curbside management strategy DDOT has used since March 2008 with the introduction of the first pilot zone in the Ballpark District of Ward 6.

District Department of Transportation

Implementation Timeline

DDOT is working with Council member Tommy Wells' office to have a public kick off meeting during the first two weeks of February. At this event the department will provide an overview of performance based parking and modifications coming to the corridor.

After the kick off meeting DDOT will provide community stakeholders with approximately 30 days to review and comment on the plan before implementation.

Performance Based Parking will compliment Streetcar along the corridor

DDOT will begin variable rate meter operations along the H Street, NE corridor on all 36 multi space meters (MSMs) as well as Resident Only RPP on blocks within the RPP database as follows:
North: I Street, NE
East: 15th Street, NE/Benning Road, NE
South: G Street, NE
West: 3rd Street, NE

H Street NE Baseline Meter Rates

DDOT's networked MSM's along H Street, NE have the capacity for time of day or hourly variable rate meter operations. The idea of time of day meter operations is not new to the District performance parking zones.

In March 2009, when the department began performance parking operations in Columbia Heights, DDOT implemented a similar strategy. The original meter programming in Columbia Heights provided for two hour time limits in the mornings and three hour time limits in the afternoons and evenings at the same rate.

DDOT will measure Occupancy Rates for all metered spaces along corridor

In July of this year DDOT shifted from time of day meter operations to hourly variable rates on all performance parking meters in Columbia Heights and extended the meter hours of operations until 10pm. DDOT will use the same phased implementation approach along the H Street, NE corridor at the following rates:
7am to 6:30pm: $.75 per hour with a four hour limit
6:30pm to 10pm: $2.00 per hour with no time limit

Methodology

Pilot Zone boundaries are from 3rd Street, NE to 15th Street, NE

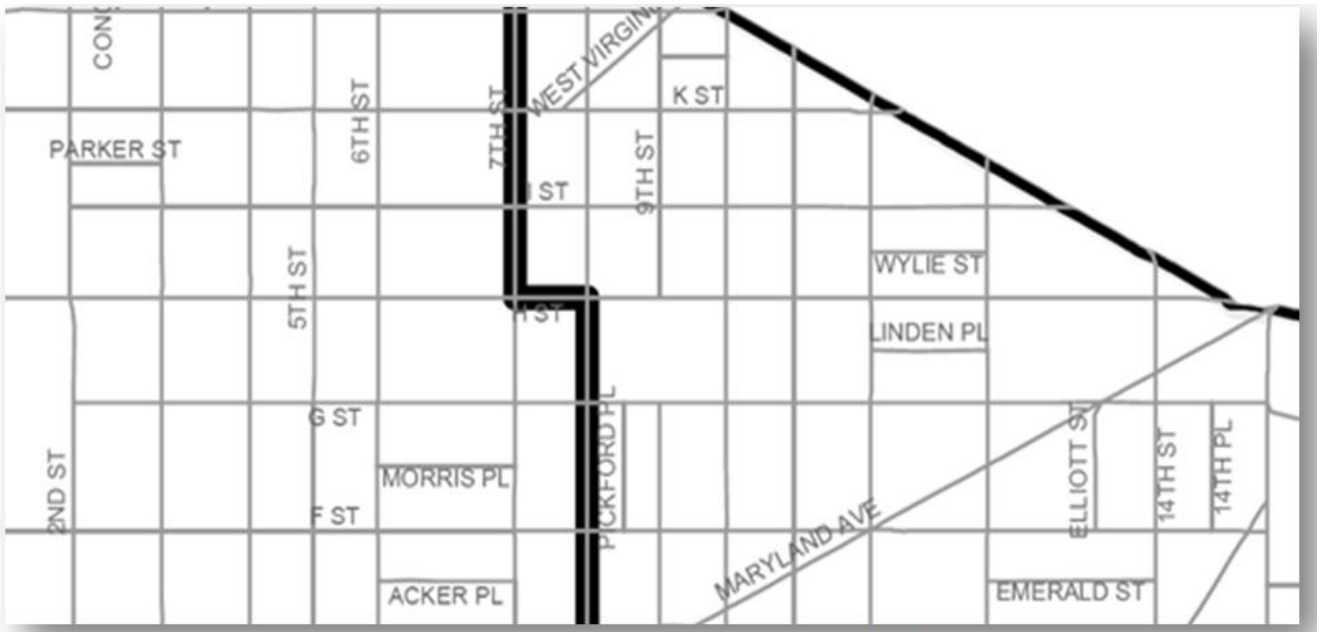
The occupancy rate target for metered curbside parking along the H Street, NE corridor will be between 80% and 90%; just as in the Ward 6 Ballpark District pilot. An occupancy rate set between these percentages will mean that approximately one or two spaces will be available out of every ten MSM spaces.

An occupancy rate target of 80% to 90% is standard in other jurisdictions implementing congestion pricing programs but it is by no means perfect. For example, the city of Seattle has a target occupancy rate of 60% in its zones and they have a very successful program. Seattle's target may be too low for the District, however after a year of analysis with regular updates using meter revenues the department will have a clear idea whether the target needs to be adjusted.

Enforcement

The H Street, NE performance based parking enabling law limits the Resident Only RPP and visitor passes to one block on each side of the corridor as follows:
North: I Street, NE
East: 15th Street, NE/Benning Road, NE
South: G Street, NE
West: 3rd Street, NE

At the outset of pilot zone operations DDOT will provide each household on existing RPP blocks within one block of H Street, with Resident Only RPP enforcement as well as one visitor pass per household.



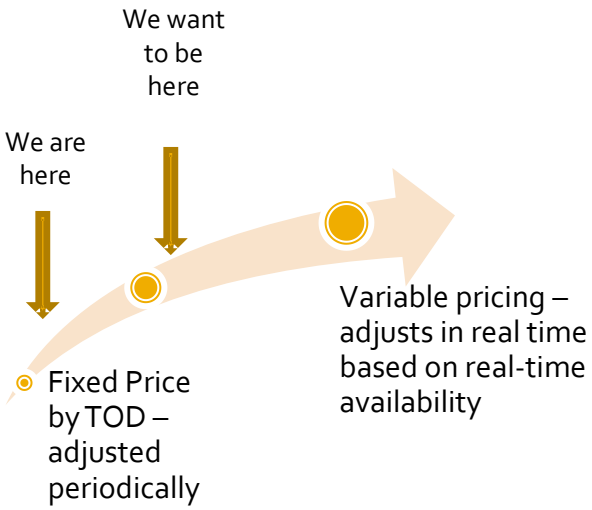
H Street, NE corridor including Resident Only RPP blocks in enabling law

Presentation Outline

- How "dynamic" do we need to be with our pricing strategies?
- How accurate do we need to be with real-time sensor information?
- Asset Lite Solutions
  - Do we need meters for all spaces?
  - Minimize sensor usage

How "Dynamic"?

Dynamic Pricing Spectrum



Pros and Cons on Real-Time Price Adjustments

Pricing Strategy	Advantages	Disadvantages
Fixed Price by TOD	Pricing structure easy to understand for consumers Easy to communicate	"Average" availability will be 1 space per block face Pricing strategy based on historical data
Purely "dynamic"	Price based on real-time availability – better impact on congestion?	Difficult to communicate for "open system" in an urban environment Sophisticated data collection, analysis and algorithm

Similarities between fixed time vs. adaptive controllers

Is the additional expense and effort justified by the ability of real-time pricing to affect congestion

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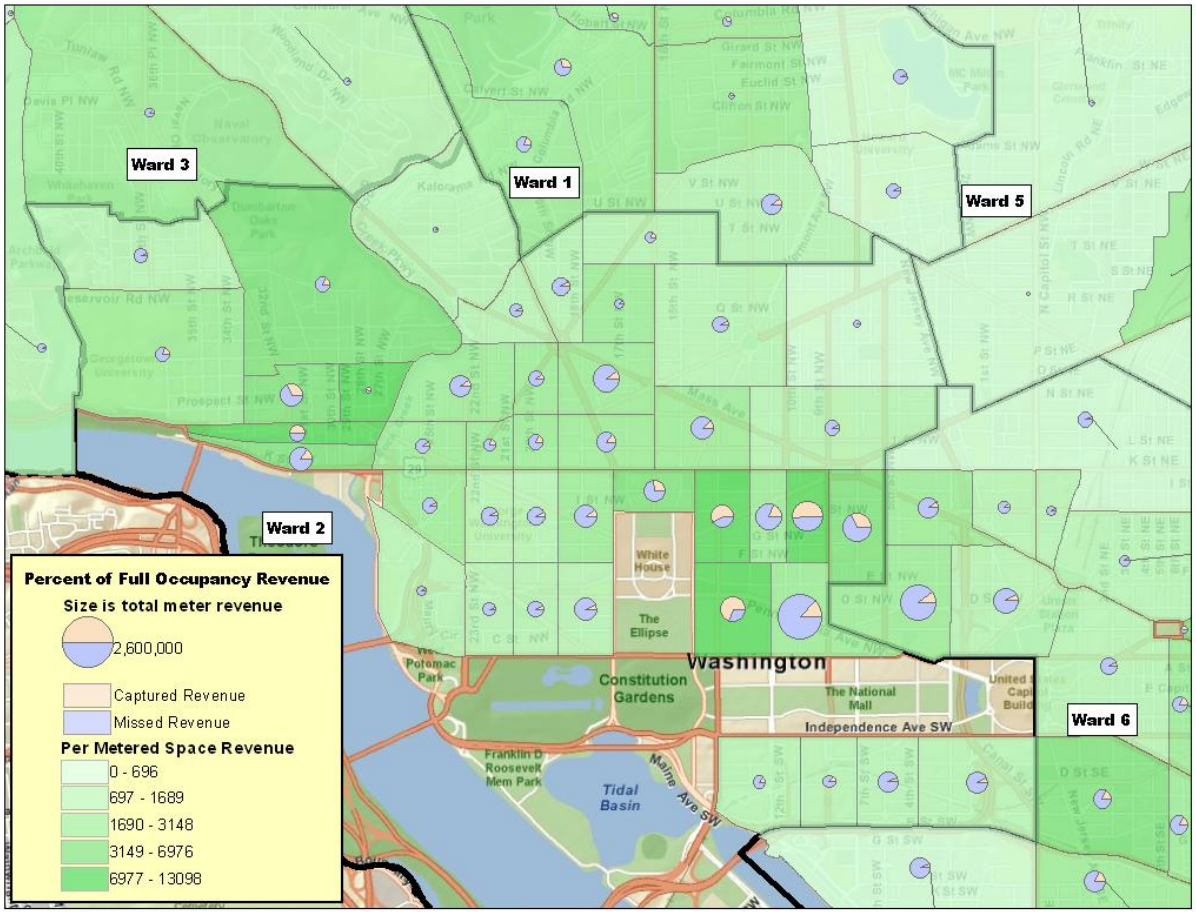
How accurate does occupancy information need to be?

- One sensor per space; sometimes more
- Capital + Operating Cost
- Driven by accuracy and latency needs
- Different accuracy requirements for dynamic pricing and traveler information?
- Can we derive occupancy from a sampling of real-time sensors, data-mining and real-time system information

Capture Rate Analysis



Capture rate = Max. Revenue/Actual Revenue

Capture rate can be available in real-time with networked assets

Capture rate = f(demand, meter uptime, percentage paid legal)

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Getting to Occupancy

Capture Rate = *f(system uptime, paid legal, occupancy)*

System Uptime	Occupancy	Paid Legal
• Available for networked assets	• Use capture rate as surrogate • Sampled detector data	• Calibrate using historical data

Analogy - Speed, travel time, congestion on roadways based on sample probe data

How accurate do we need to be?

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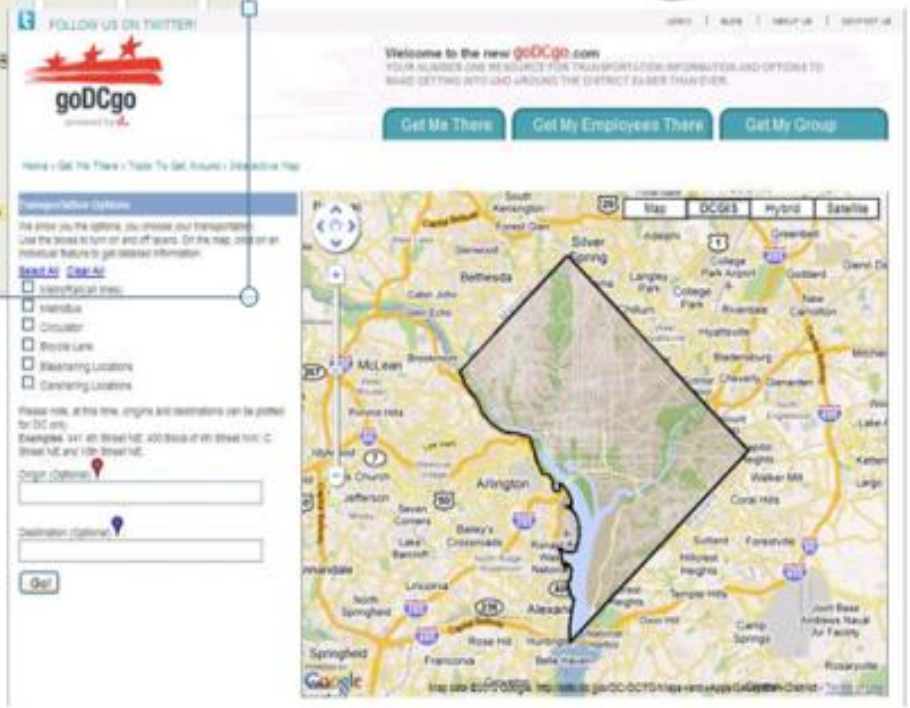
Real Time Traveler Information

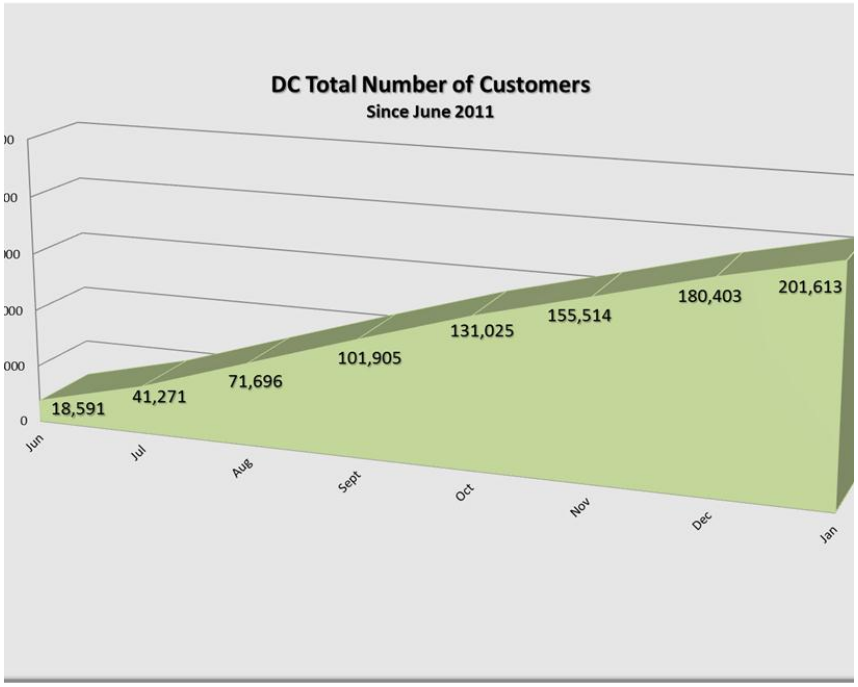


Curbside congestion map

Accuracy requirement higher for real-time traveler information than dynamic pricing algorithm?
Branding & Credibility

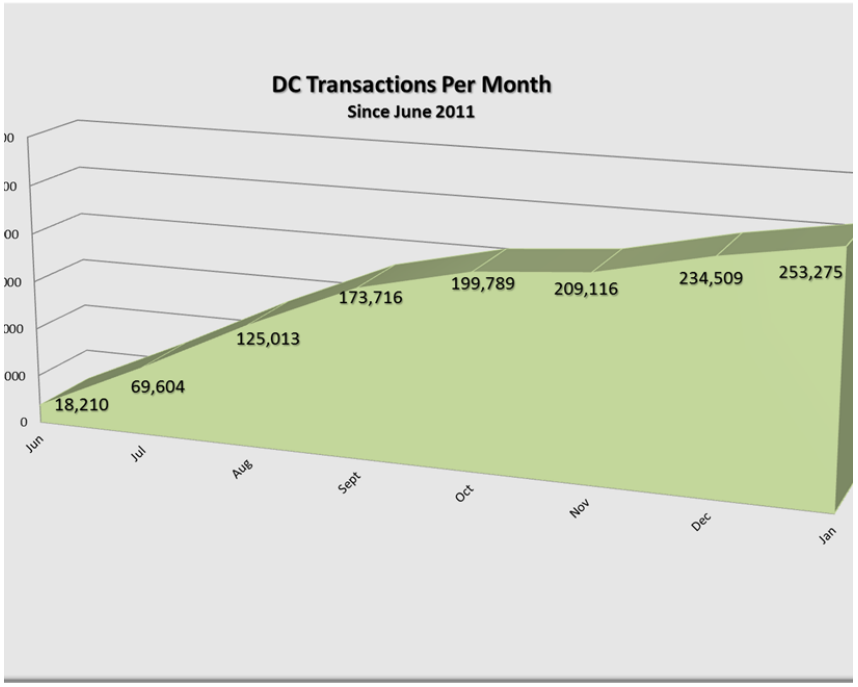
Asset Lite Solutions – DC Pay by Cell Program

CUSTOMERS



201,000 customers as of end of January 2012
Most successful pay by cell launch globally
Vehicles registered in all states have used the system
More than half the customers have used the system multiple times

TRANSACTIONS



1,300,000 transaction since launch
Highest week 70,000; highest day 12,000
67% of transactions initiated through smart phone application
Revenue/transactions higher than coin transaction
30% of revenues through PBC program

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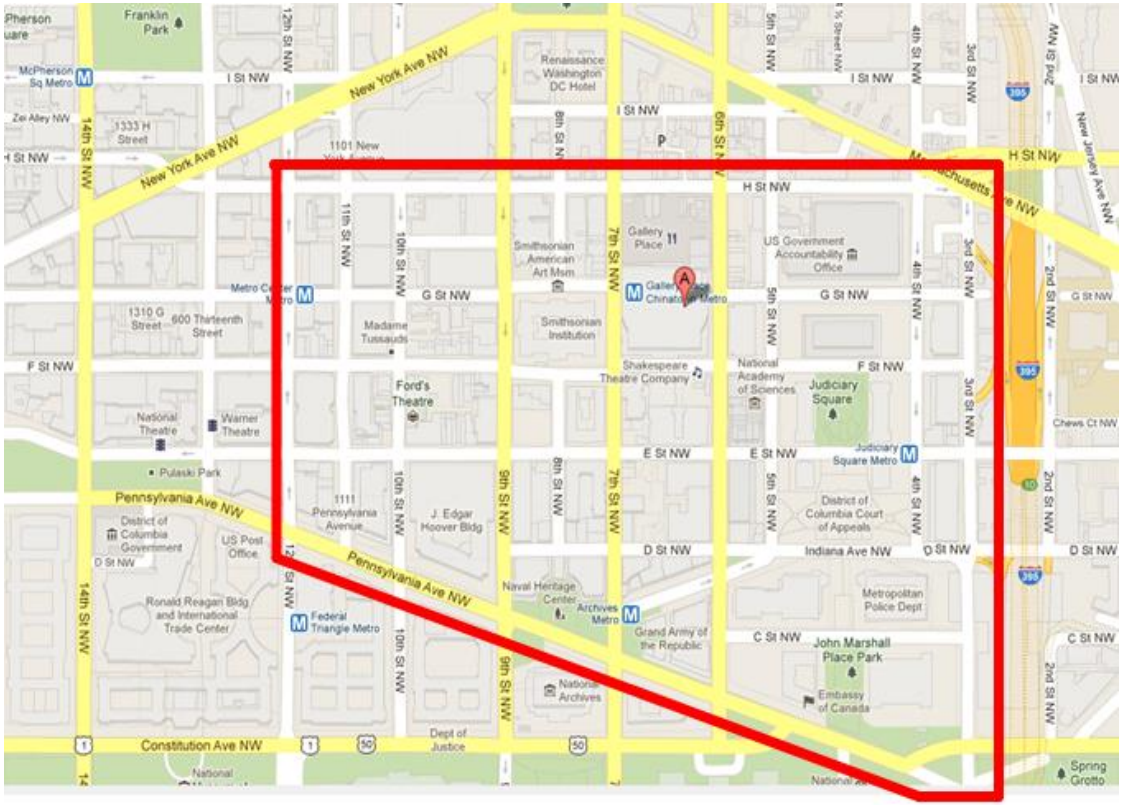
Multimodal Dynamic Pricing Pilot

Pilot area exemplifies Multimodal curbside demand and competition.

Pilot will provide real time rates from through street sensors and real time traveler information

Pilot has:
160 block faces
1,600 metered spaces
30 Loading zones
10 Commuter Bus Drop Off and Pick Up Locations



Asset Lite Solutions in DC in Dynamic Pricing Environment

- For passenger cars
  - Dynamic pricing – move-up the dynamic spectrum
  - As pay by cell penetration rates increase to above 50%, remove meters from one side of the street
- For tour buses
  - Pay by cell only solution
  - Rate structure based on length of stay
  - Spaces designated by pay by cell zone numbers
- For freight/trucks
  - Pay by cell only
  - Cost adjusted based on pre-AM rush, AM/PM rush, mid-day, post PM rush
  - Relieve congestion by trying to divert loading/unloading to off-peak
  - Real-time availability information adds value to freight industry by helping plan deliveries better